

CLAIMS

1. A permselective separation membrane which is characterized in that:

5 (a) the permselective separation membrane is made mainly of a polysulfone-based polymer and polyvinyl pyrrolidone;

(b) when bovine blood at a temperature of 37°C having hematocrit value of 30%, containing 6 to 7 g/dl of total proteins and sodium citrate added thereto is flowed through a
10 module comprising the permselective separation membrane packed therein at a flow rate of 200 ml/min. and a filtration rate of 20 ml/min.,

(i) a sieving coefficient of albumin [A] becomes not less than 0.01 and not more than 0.1 after 15 minutes; and

15 (ii) a sieving coefficient of albumin [B] becomes not less than 0.005 and less than 0.04 after 2 hours.

2. The permselective separation membrane according to claim 1, wherein the sieving coefficient of albumin [B] after
20 2 hours is less than the sieving coefficient of albumin [A] after 15 minutes.

3. The permselective separation membrane according to claim 1 or 2, wherein the sieving coefficient of albumin [A]
25 after 15 minutes and the sieving coefficient of albumin [B] after 2 hours satisfy a relation of $[B]/[A] = 0.1$ to 0.4 .

4. The permselective separation membrane according to any one of claims 1 to 3, wherein clearance of $\alpha 1$ -microglobulin
30 is not less than 15 ml/min (1.0 m^2).

5. The permselective separation membrane according to any one of claims 1 to 4, wherein the amount of α 1-microglobulin adsorbed is within a range from 2.0 to 20 mg/m².

5 6. The permselective separation membrane according to one of claims 1 to 5, wherein a skin layer thickness of the permselective separation membrane is from 0.1 to 1.2 μ m.

7. The permselective separation membrane according to any
10 one of claims 1 to 6, wherein a membrane thickness of the permselective separation membrane is from 25 to 45 μ m.

8. The permselective separation membrane according to any one of claims 1 to 7, wherein polyvinyl pyrrolidone is not
15 substantially crosslinked.

9. The permselective separation membrane according to any one of claims 1 to 8, wherein the polyvinyl pyrrolidone content in the uppermost layer of a surface on the blood
20 contacting side of the permselective separation membrane is from 20 to 40% by weight.

10. The permselective separation membrane according to any one of claims 1 to 9, wherein the polyvinyl pyrrolidone
25 content in a layer near the surface on blood contacting side of the permselective separation membrane is from 5 to 20% by weight.

11. The permselective separation membrane according to any
30 one of claims 1 to 10, wherein the polyvinyl pyrrolidone content in the surface on non-blood contacting side of the

permselective separation membrane is from 25 to 50% by weight,
and a ratio $[D]/[C]$ between the polyvinyl pyrrolidone content
[D] in the uppermost layer of a surface on non-blood
contacting side and the polyvinyl pyrrolidone content [C] in
5 the uppermost layer of a surface on blood contacting side is
1.1 or higher.

12. The permselective separation membrane according to any
one of claims 1 to 11, wherein an aperture ratio of the
10 surface on blood contacting side of the permselective
separation membrane is from 20 to 35%.

13. The permselective separation membrane according to any
one of claims 1 to 12, wherein the permselective separation
15 membrane is a hollow fiber membrane.

14. The permselective separation membrane according to any
one of claims 1 to 13, wherein a burst pressure of the hollow
fiber membrane is 0.5 MPa or higher.

20 15. The permselective separation membrane according to any
one of claims 1 to 14, wherein thickness deviation of the
hollow fiber membrane is 0.6 or more.

25 16. The permselective separation membrane according to any
one of claims 1 to 15, wherein the amount of a hydrogen
peroxide elution measured on the extract liquid taken from
every one of 10 equal divisions of the hollow fiber membrane
cut in the longitudinal direction is 5 ppm or less.

30 17. A method for producing a permselective separation

membrane wherein, when a membrane forming solution and an internal liquid are discharged from a tube-in-orifice type nozzle, pass an air gap and are solidified in a solidification bath,

5 the membrane forming solution is constituted from a polysulfone-based polymer, polyvinyl pyrrolidone and a solvent;

 the ratio of polyvinyl pyrrolidone content to polysulfone-based polymer content is from 10 to 18% by
10 weight;

 the internal liquid is an aqueous solution containing 30 to 60% by weight of amide-based solvent; and

 a liquid temperature of the internal liquid is set 30 to 60°C lower than the temperature of the membrane forming
15 solution and the liquid temperature is from 0 to 40°C when discharged.

18. The method for producing a permselective separation membrane according to claim 17, wherein the tube-in-orifice
20 type nozzle is an internal liquid thermal medium circulation type block.

19. The method for producing a permselective separation membrane according to claim 17 or 18, wherein the tube-in-
25 orifice type nozzle has a ratio of the maximum nozzle slit width to the minimum width within a range from 1.00 to 1.11.

20. The method for producing a permselective separation membrane according to any one of claims 17 to 19, wherein the
30 membrane forming solution is filtered by means of a filter having a mesh size of 25 μ m or smaller.

21. The method for producing a permselective separation membrane according to any one of claims 17 to 20, wherein polyvinyl pyrrolidone having a hydrogen peroxide content of 5 300 ppm or lower is used as the raw material.